ENVIRONMENTAL DEGRADATION OF DURIAN SKIN NANOFIBRE BIOCOMPOSITE

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Abstract

The effect of ultraviolet radiation on tensile properties, water absorption and optical properties of polypropylene (PP) reinforced with durian skin nanofibre (DSNF) composites was investigated. DSNF was obtained from fermentation of durian skin fibre using Rhizopus oryzae. X-ray diffraction (XRD) analysis and Sherrer equation were applied to measure the average particle size of DSNF which was determined as 51.2 nm. PP and DSNF were melt-blended in a Haake internal mixer before compression moulded into composite specimens. The composites were exposed under ultraviolet (UV) radiation to simulate the effect of sunlight. The significant effect of maleic anhydride polypropylene (MAPP) was observed by the improvement recorded in tensile properties and reduction of water absorption in PP/DSNF composite. The colour index of composites increased with UV radiation exposure. Transmission electron microscope (TEM) images showed DSNF was well-dispersed in PP matrix in the presence of MAPP.

Keywords

Author Keywords: Durian skin nanofibre; ultraviolet radiation; MAPP; color index; water absorption; Rhizophus oryzae

KeyWords Plus: REINFORCED POLYPROPYLENE COMPOSITES; FIBER; PERFORMANCE; FTIR

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